

REMARKS

Claims 1-20 are currently pending in the application. Claims 1, 2 and 6-20 stand rejected under 35 USC §102 as allegedly anticipated by U.S. Patent No. 6,402,505, to Okada et al (Okada). Claims 1, 2 and 6-20 stand alternatively rejected under 35 USC §102 as allegedly anticipated by U.S. Patent No. 6,024,064, to Kato et al (Kato). Claims 3-5 stand rejected under 35 USC §103 as obvious over either Okada or Kato.

Reconsideration of the rejection of Claims 1-20 is requested.

Claim 1 has been amended to characterize the spraying means as comprising a fuel spraying nozzle for jetting fuel. The fuel channel for flowing fuel therethrough is characterized as comprising a fuel feed canal for communicating fuel to the fuel spraying nozzle. The fuel channel is further characterized as comprising a fuel return canal for returning fuel from the fuel spraying nozzle that is communicated to the fuel spraying nozzle through the fuel feed canal and not jetted by the fuel spraying nozzle.

The prior art cited by the Examiner does not teach or suggest an intermittently operating valve disclosed in a corresponding return canal of a fuel channel.

Okada discloses only a fuel injection valve 4 which is intermittently operable to directly cause the fuel spraying.

Kato discloses an electromagnetic valve 220. As seen in Figs. 1 and 5, the valve 220 is disposed in a pump 104 in a feed channel. A high pressure regulator 10 in a return channel has an associated needle valve 15, as shown in Figs. 1 and 2. The needle valve 15 is not intermittently operable, as is the operating valve recited in claim 1.

Accordingly, claim 1 is believed allowable, as are claims 2-11, each of which depends from claim 1 and recites further significant structural detail to further distinguish over the prior art.

Claim 12 has been amended so that the spraying means and fuel channel recited therein include the added limitations of claim 1. The arguments advanced relative to the allowability of claim 1 apply equally to claim 12.

Claims 13-15 each depend from claim 12 and recite further significant structural detail to further distinguish over the prior art.

Claim 16 recites, *inter alia*, that a valve body on an intermittently operating valve is closed and opened periodically at regular and variable intervals by a duty-ratio control. The duty-ratio control is repeated at a frequency that is adjusted responsive to the current flow rate of the fuel being burnt in such a manner that "if the ratio of a first time length for the valve body to move once from the first position to the second position and then back from the second position to the first position divided by a second time length in which said valve body remains at the second position during one cycle of said duty-ratio control does exceed a threshold, then one cycle time in the duty-ratio control is prolonged".

The Examiner has not cited to any disclosure in either of Okada or Kato to support the rejection under 35 USC §102, nor can a disclosure of the above limitations be found in either reference. Accordingly, it is respectfully submitted that the rejection of claim 16 under 35 USC §102 based on Okada and Kato is improper.

Further, there is no disclosure in Okada or Kato that would make obvious the structure in claim 16, and particularly the limitation noted above.

Accordingly, claim 16 is believed allowable, as are claims 17 and 18, which depend therefrom and recite further significant structural detail to further distinguish over the cited prior art.

Claim 19 has been amended to characterize the temperature sensing means as disposed in the fuel channel in order to detect the temperature of fuel flowing through the fuel channel. The valve is driven at a frequency that is adjusted based on the temperature detected by the sensing means during combustion.

The cited references are devoid of any teaching or suggestion of a temperature sensing means or operating valve as now recited.

Claim 19 is thus believed allowable, as is claim 20, which depends from claim 19 and recites further significant structural detail to further distinguish over the cited art.

Reconsideration of the rejection of claim 1-20 is requested.

Respectfully submitted,

By



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IN THE DRAWINGS:

Applicant is submitting herewith a copy of Figs. 18 and 19 with the legend "prior art" thereon. This requirement was made by the Examiner on page 1 of the Action. Approval of the replacement sheets of drawings is requested.